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Supply chain as a Game-Changer in the fight against climate change

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Foreword

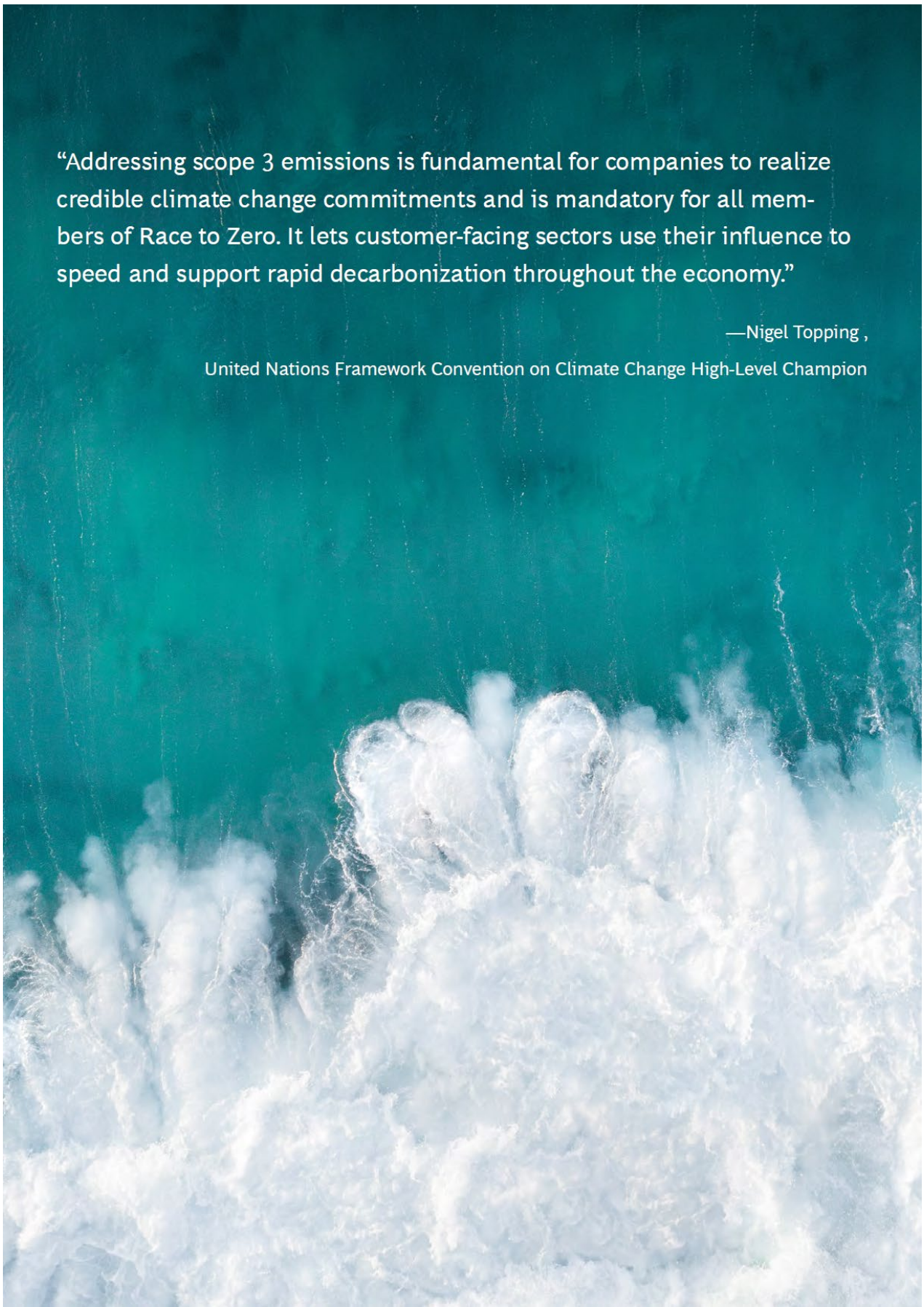
The COVID crisis has led to unprecedented disruptions of global supply chains, from historical levels of port congestion to warehouses halting operations due to workforce shortages. As we begin this year's Choose France summit and despite containment measures having ended in most economies, supply chains have not yet fully recovered. This has created tremendous challenges for companies who are trying to resume normal business activities. The international maritime container and air freight markets are still feeling an impact with a historically high level of freight rates (from X2 to X5 compared to before the COVID-19 pandemic) and a shortage of equipment and transportation capacity.

Solving these challenges in the short term will be key in ensuring a prompt recovery for global trade. In the mid term, companies and Governments will also have to face new questions such as how to modify supply chains

to enhance the resilience of economic activity. This question is already at the top of many corporations' agendas and there is no easy answer. If regionalization is a potential solution, then a crucial question arises: can you regionalize manufacturing and the associated supply chains without simultaneously increasing the carbon footprint?

The question of whether the decarbonation of supply chains contributes to reaching net-zero arose before the COVID-19 crisis, but it has now become even more pertinent. We thus consider it relevant to share BCG's perspective on the challenges of decarbonating supply chains. In this short article summarizing a report¹ by the World Economic Forum (WEF) in collaboration with BCG, you will find insights on the challenges of moving towards net-zero supply chains, on the barriers companies are facing and how these might be addressed.

¹ See full report www3.weforum.org/docs/WEF_Net_Zero_Challenge_The_Supply_Chain_Opportunity_2021.pdf

An aerial photograph of a vast, deep blue ocean. In the lower half of the image, a large, white, foamy handprint is visible, appearing as if a giant hand has just emerged from the water. The handprint is composed of several distinct fingers, each with a rounded, bubbly tip. The water around the handprint is turbulent and white with foam, contrasting sharply with the deep blue of the surrounding sea. The overall image has a textured, slightly grainy quality, typical of high-quality photography.

“Addressing scope 3 emissions is fundamental for companies to realize credible climate change commitments and is mandatory for all members of Race to Zero. It lets customer-facing sectors use their influence to speed and support rapid decarbonization throughout the economy.”

—Nigel Topping ,
United Nations Framework Convention on Climate Change High-Level Champion

For companies, especially those in consumer-facing sectors, end-to-end supply chain emissions are much higher than the direct emissions from their own operations. By implementing a net-zero supply chain, companies can amplify their climate impact, enable emission reductions in hard-to-abate sectors, and accelerate climate action in countries where it would otherwise not be high on the agenda.

In most supply chains, the costs of getting to net zero (the state in which as much carbon is absorbed as is released into the atmosphere) are surprisingly low. Even full decarbonization would result in end consumer price increases of only 1% to 4% in the medium term—less than \$1 on a \$40 pair of jeans.

A GLOBAL OPPORTUNITY WITH SURPRISING ECONOMICS. Eight global supply chains account for more than 50% of annual greenhouse gas emissions. Only a small proportion of these emissions are produced during final manufacturing. Most are embedded in the supply chain—in base materials, agriculture, and the freight transport needed to move goods around the world. (See Exhibit 1.)

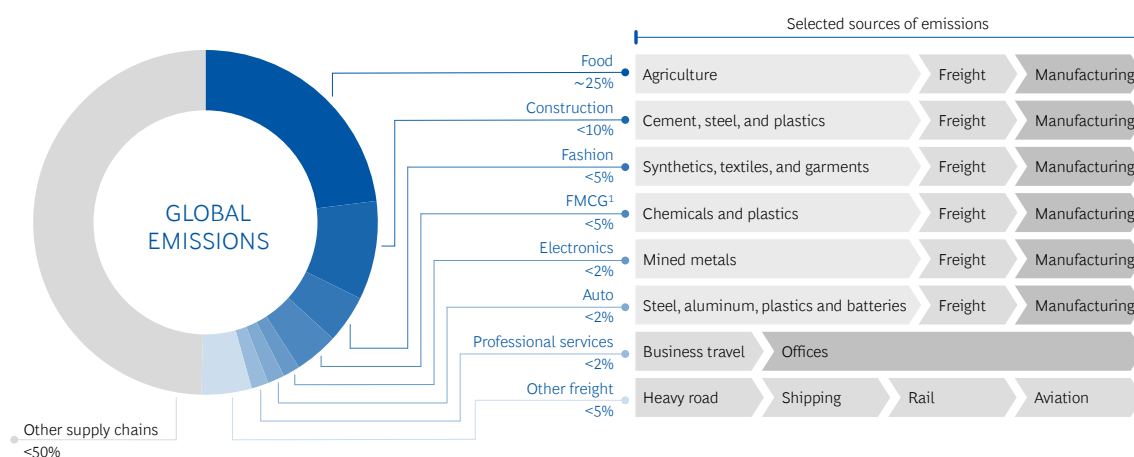
For producers of many of these materials, as well as for freight transport players, ambitious decarbonization is extremely challenging. Many emission reduction measures are comparatively expensive. Supply chain partners often operate in markets that are commoditized, with slim margins and limited opportunities for

differentiation. Across a whole value chain, however, emissions may be addressed more affordably. In most supply chains, there is the potential for substantially more efficiency and for much greater reuse of materials. (See Exhibit 2.) In addition, a large share of emissions comes from traditional power, which can be replaced relatively cheaply with renewables.

As a result of this—and the fact that emission-intensive base materials account for only a small share of end consumer prices—decarbonization is much less expensive for companies at the end of any given value chain. In fact, in all the value chains we have analyzed, full decarbonization would lead to an increase of no more than 4% in end consumer prices.

How can this be? As an example, consider the steel that goes into a midsize family car with a \$35,000 sticker price. Producing steel is one of the most emissions-intensive activities in the supply chain. Producing zero-carbon steel can increase the steel makers' costs significantly—by as much as 50% in some cases. But since steel accounts for only roughly \$1,000 of total car costs, the markup on this final product will be much, much lower. In fact, the same car made with exclusively zero-carbon materials would cost only about \$600 more—or roughly a difference of 2%. Considering that getting there will take even the most ambitious companies many years, the immediate economics look much less scary. (See Exhibit 3.)

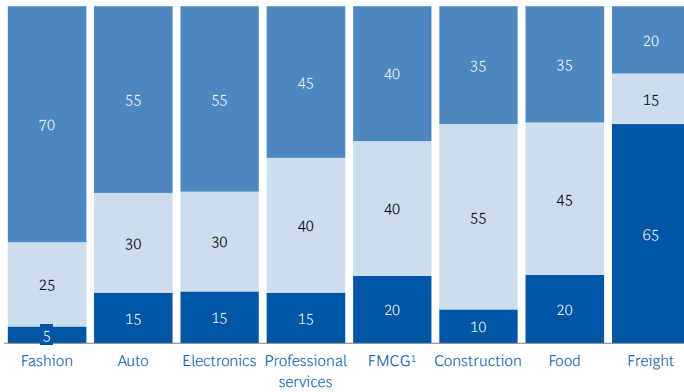
Exhibit 1 – The eight supply chains that dominate emissions



1. FMCG = Fast-moving consumer goods
Note: Only selected value chain steps are shown in chevrons. The width of a chevron does not reflect the proportion of CO₂ emissions
Source: BCG analysis

Exhibit 2 – The cost of abating emissions by supply chain

Estimated share of abatement lever cost by value chain (%)



1. FMCG = Fast-moving consumer goods
Source: BCG analysis

Levers with average costs

- 40% at <\$12 per ton of CO₂ equivalent
 - Circularity
 - Material and process efficiency
 - Renewable power
- 40% at <\$12-\$120 per ton of CO₂ equivalent
 - Renewable heat
 - New processes
 - Nature-based solutions
- 20% at >\$120 per ton of CO₂ equivalent
 - Fuel switch
 - Carbon capture, utilization, and storage

Exhibit 3 – Price markup for products with net-zero supply chains

Estimated average increase in cost for customers



Source: BCG analysis

Why Little Progress Has Been Made to Decarbonize Supply Chains

So why is supply chain decarbonization not already commonplace? The answer is that it is challenging.

For one thing, most companies do not understand the extent or the nature of the problem. While a manufacturer can calculate the greenhouse gas emissions from its own operations with a relatively high degree of confidence, getting a view on scope 3 emissions is complex. The challenges are especially daunting for companies with tens of thousands of individual products and significant turnover in the supplier base. Some even struggle to understand who their suppliers are in the first place. It does not help that data-sharing on product emission footprints is still in its infancy.

Even when companies have a decent amount of transparency, addressing emissions is far from trivial. Supply chain emissions can be distributed across hundreds of individual **tier n** suppliers (including suppliers and suppliers of suppliers) in many countries around the globe. They are not static. And prompting action can be challenging. It requires a deeper understanding of abatement economics in upstream sectors, more intensive engagement with suppliers, greater education, joint projects, and, in some cases, the willingness to commit to long-term partnerships. Not many procurement organizations are set up to do these things.

Overcoming Barriers

Fortunately, many of the obstacles can be overcome. Nine initiatives can enable companies to tackle their supply chain emissions successfully.

BUILD A VALUE CHAIN EMISSIONS BASELINE AND EXCHANGE DATA WITH SUPPLIERS. Establishing a comprehensive emissions baseline is a crucial first step. Starting with tier 1 suppliers and the products, components, and commodities that account for the most CO₂ emissions, companies should define a baseline using emissions factor databases, paired with direct supplier data where available.

SET AMBITIOUS REDUCTION TARGETS ON SCOPES 1 TO 3 AND PUBLICLY REPORT PROGRESS. Once they have transparency on their supply chain emissions, companies should set a public target of 1.5°C, a net-zero target, or both, across all emissions scopes and understand what this means for their businesses. In most cases, targets are achievable at limited cost. Companies should also actively cascade targets through their supply chains.

REDESIGN PRODUCTS FOR SUSTAINABILITY. Companies should make sustainability part of design decisions, for example by increasing recyclability and using greener materials. Even existing products can be redesigned to reduce supply chain emissions.

DESIGN THE VALUE CHAIN AND SOURCING STRATEGY FOR SUSTAINABILITY. Companies should also consider emissions in their value chain design choices, for example by rethinking their make-or-buy decisions and by limiting the need for long-range logistics. Nearshoring can reduce transport emissions and has the secondary benefit of making supply chains more resilient to shocks—increasingly important in a postpandemic world.

INTEGRATE EMISSIONS METRICS IN PROCUREMENT STANDARDS AND TRACK PERFORMANCE. Setting procurement standards for suppliers is one of the most powerful direct ways to address upstream emissions. Strong standards link practices to procurement decisions, such as mandating a specific share and quality of renewable power, required levels of process efficiency, or a required share of recycled materials. In some cases, this may require more intensive engagement—for example to educate, provide technical advice, enable longer-term asset upgrades, or encourage a commitment to continuous improvement.

WORK WITH SUPPLIERS TO ADDRESS THEIR EMISSIONS. Some upstream suppliers may lack the knowledge to reduce emissions. Providing education and technical support can be transformative. Where tier n suppliers struggle with the economics of longer-term asset upgrades, companies can help by co-investing or committing to longer-term offtakes.

**Supply chain decarbonization
presents a giant untapped
opportunity for international
climate action.**



ENGAGE IN SECTOR INITIATIVES FOR BEST-PRACTICE SHARING, CERTIFICATION, TRACEABILITY, AND POLICY ADVOCACY. Pushing for sector initiatives through industry bodies is another way to increase impact. Ambitious companies should put pressure on industry bodies and other organizations to establish sector-level targets for climate action. Companies can also join forces in cross-sector policy groups to change the wider policy context for decarbonization.

SCALE UP BUYING GROUPS TO AMPLIFY DEMAND-SIDE COMMITMENTS. Joint commitments on green materials can be a powerful tool to encourage upstream investments into otherwise subscale decarbonization technologies and make green solutions more economic over time.

INTRODUCE A LOW-CARBON GOVERNANCE TO ALIGN INTERNAL INCENTIVES AND EMPOWER YOUR ORGANIZATION. Finally, companies looking to decarbonize their supply chains need to change the way they operate internally. Procurement functions will have to adjust, as will product development, finance, strategy, and sustainability. Supply chain changes will

be successful only to the extent that they are supported by clear targets, dedicated funding, and management incentives. At the same time, the number of interfaces between functions involved in climate-related topics needs to be reduced. All of this requires better governance.

Time to Move

Supply chain decarbonization presents a giant untapped opportunity for international climate action. It can enable companies with relatively small direct-emissions footprints to have impact on a global scale. And it does so with a very limited impact on final product prices. In most industries, economics are not a meaningful barrier to achieving net-zero supply chain emissions.

Upstream decarbonization, however, is hard—and it takes time. It requires companies to change the way they design products, choose, and engage with suppliers, and govern their own organizations. Leading companies are already addressing these challenges. Others should start doing so, too.

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This article is a summary of a longer report published by the World Economic Forum in collaboration with Boston Consulting Group. The full report can be downloaded [here](#).

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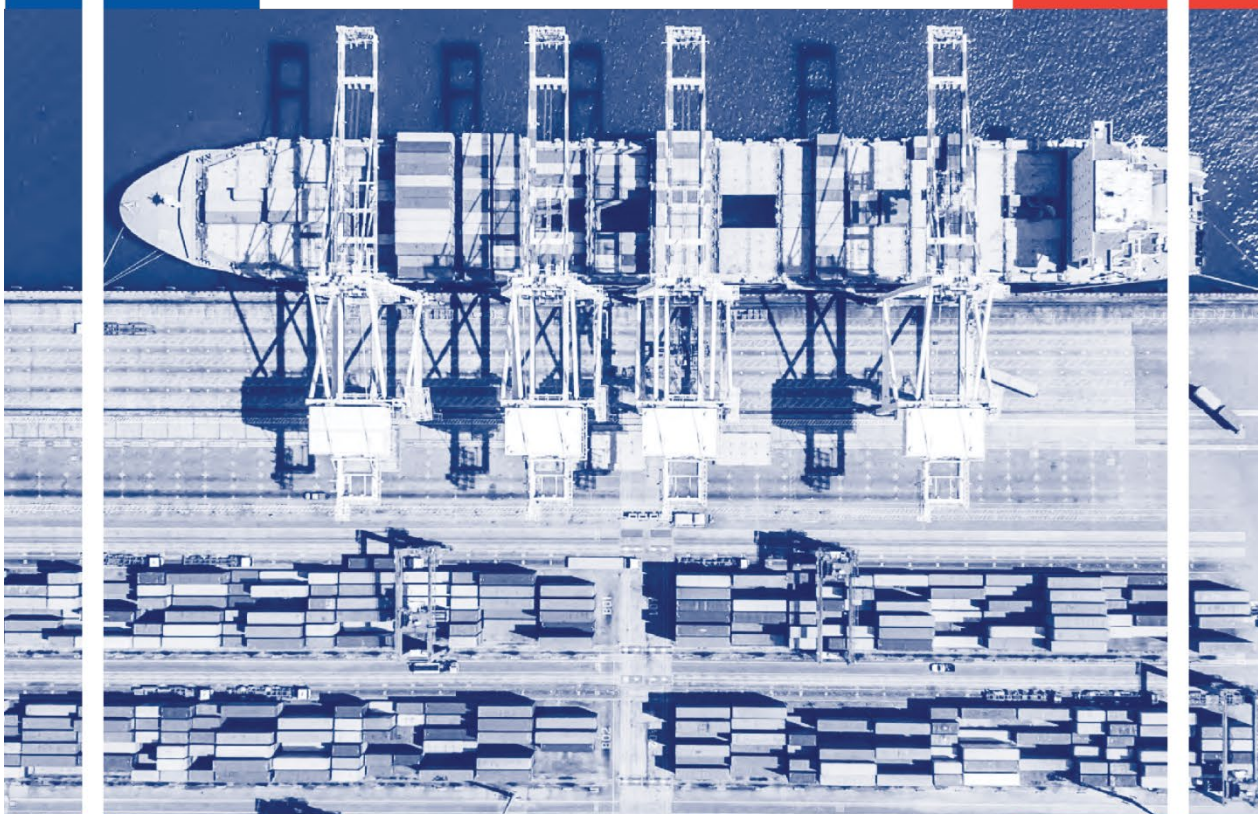
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